

L 19563-65 EWT(1)/EWT(m)/EEC(b)-2/EED-2/T/EWP(t)/EWP(b) IJP(c)/SSD/SSD(c)/BSD/
AFWL/ASD(a)-5/AS(mp)-2/AFETR/ESD(dp)/ESD(gs)/ESD(t) JD S/0048/64/028/008/1360/1366
ACCESSION NR: AP4044654

AUTHOR: Spivak, G.V.; Shishkin, B.B.; Michurina, K.A.; Khabel', V. B

TITLE: On the quantitative investigation of efficient emitters in a wide temperature range by observation of contrast in the electron-optical image Report, 11th All-Union Conference on Cathode Electronics held in Kiev, 11-18 Nov 1963 III

SOURCE: AN SSSR. IZV. Seriya fizicheskaya, v.28, no.8, 1964, 1360-1366

TOPIC TAGS: emitter, electron emission, electron microscopy, electron optics, cathode 21
14

ABSTRACT: The present work was a continuation of a series of studies by the authors of emitters and surface emission by means of various electron-optical techniques. The authors' earlier analysis of contrast formation in an electron-optical image of an emitter is generalized to the case of nonuniform efficient cathodes. The results provide the basis for interpretation of data on local emission, taking into account various factors. For the present study there was used an electronic circuit that made possible rapid measurement of local currents from a whole region of the emitter, rather than from a point. The formation of (phase) contrast under the influence

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ACCESSION NR: AP4044654

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of different factors (microfields, patch fields, photoemission, secondary emission, etc.) is discussed and the pertinent formulas are adduced. A block diagram of the emission electron microscope used for the study is shown in the Figure (Enclosure). A number of photographs of emitter surfaces are reproduced in the text. By means of the developed oscillographic procedure it should be feasible to perform rapid analyses of various cathodes in different stages of preparation. "The authors are grateful to A.M.Rozenfel'd for assistance in rebuilding the emission microscope." Orig.art.has: 10 formulas and 5 figures.

ASSOCIATION: Fizicheskiy fakultet Moskovskogo gosudarstvennogo universiteta (Physics Department, Moscow State University)

SUBMITTED: 00

ENCL: 01

SUB CODE: EC,EM

NR REF SOV: 012

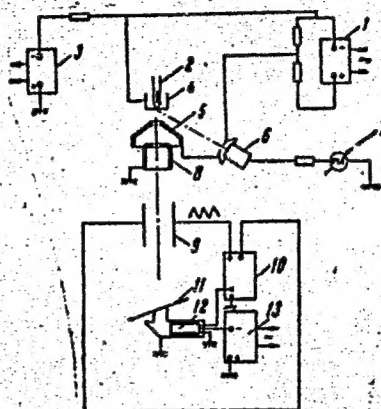
OTHER: 001

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ACCESSION NR:AP4044654

ENCLOSURE: 01

Fig.1. Block diagram of the emission electron microscope: 1) bias voltage rectifier, 2) cathode heater, 3) accelerating voltage rectifier, 4) cathode, 5) focusing electrode, 6) ion gun, 7) microammeter, 8) anode, 9) deflecting plates, 10) oscillograph, 11) screen, 12) photomultiplier, 13) photomultiplier supply (rectifier).



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L 19562-65 EWT(1)/EWT(m)/T/EWP(t)/EEC(b)-2/EED-2/EWP(b) Pa-l(c)/AEDC(a)/SSD/BSO/
AFWL/ASD(a)-5/AS(mp)-2/AFTC(p)/ESD(t)/IJP(c) JD S/0048/64/028/008/1382/1386
ACCESSION NR: AP4044658

AUTHOR: Spivak, G.V.; Luk'yanov, A.Ye.; Abalmazova, M.G. B

TITLE: \ Observation of local contaminant films by means of a mirror electron micro-
scope / Report, 11th All-Union Conference on Cathode Electronics held in Kiev, 11-18
Nov 1963 11

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v.28, no.8, 1964, 1382-1386

TOPIC TAGS: electron emission, electron microscopy, contamination, vacuum system

ABSTRACT: The present study is one of an extensive series of investigations by the
authors' group of emitter surfaces, microfields, p-n junctions and so on, by means
of electron microscopes. The aim of the present work was direct visualization of lo-
cal deposits consisting of contaminant films of the type that form in vacuum sys-
tems with an electron beam by means of a mirror electron microscope. A common feature
of electron mirror images are dark spots, which, it has been found, may represent
dust particles or other protrusions on the specimen, local variations of the contact
difference of (patch fields), local oxide films, other films of various contaminants
(remaining on the surface owing to inadequate cleaning of the specimen) or films

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ACCESSION NR: AP4044658

settling on the specimen surface in the vacuum installation (oil, vacuum grease, rubber vapor and other organic substance films). Thus, the purpose of the present study was to distinguish and investigate films of the last two types (the first two types can readily be identified for they do not disappear as a result of heating the specimen to 200-300°C). Several micrographs of typical contaminant films (spots) are reproduced. Some of their features are discussed. The results obtained indicate that it is feasible by means of an electron mirror microscope to detect and identify dielectric films only a few Angstroms thick and that the sensitivity of the electron mirror procedure is not inferior to that of the method of post-charge emission described by P.N.Chistyakov (Zhur.tekh.fiz.33,1395,1963). Orig.art.has: 5 figures.

ASSOCIATION: Fizicheskiy fakultet Moskovskogo gosudarstvennogo universiteta (Physics Department, Moscow State University)

SUBMITTED: 00

ENCL: 00

SUB CODE: EC, ME

NR REF SOV: 005

OTHER: 008

2/2

L 8813-65 EWT(1)/EWG(k)/EWT(m)/EPA(sp)-2/EPT(n)-2/EPA(w)-2/T/EEC(b)-2/
EWA/EWP(q)/EWP(b) Pz-6/Pab-24/Pad/Pu-4 IJP(c)/AFNL/ASD(a)-5/ESD(dp)/
ESD(t)/RAEM(t) JD/HW/GG/AT

ACCESSION NR: AP4045291

S/0048/64/028/009/1411/1415⁸

AUTHOR: Spivak, G. V. (Doctor of physicomathematical sciences);
Yurasova, V. Ye.; Rozhkova, O. A.; Nikitina, T. N.

TITLE: Properties of thin Permalloy films obtained by cathodic sputtering

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 28, no. 9, 1964,
1411-1415

TOPIC TAGS: thin film, thin Permalloy film, cathode sputtered film,
sputtered film magnetic property

ABSTRACT: A study has been made of the magnetic characteristics (im-
portant for the magnetic memory-element operation) of thin Permalloy
[79% Ni] films, varying in thickness from 300 to 1000 Å, deposited by
cathodic sputtering on a glass substrate at 200C with a magnetic field
superimposed in the substrate plane. The results of the study showed
that the coercive force H_c decreases with increasing film thickness d.
The rate of decrease is similar to, but higher than, that observed

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L 8813-65

ACCESSION NR: AP4045291

in vapor-deposited films. The films deposited with a superimposed magnetic field of 150 oe had the lowest H_c . The dependence of the anisotropy field H_k on d was similar to that for H_c ; it decreased with increasing d and was at a minimum in films deposited with a superimposed magnetic field of 150 oe. A maximum H_k was obtained with a superimposed field of 235 oe. The film saturation induction B_s varied from 11,000 to 7000 gs, regardless of d . The hysteresis-loop rectangularity coefficient $K = B_r/B_s$, where B_r is the residual magnetization, deviates from unity with d increasing to 700 Å and beyond. The deviation is probably caused by a rather low anisotropy in films of such thickness. At the maximum reverse magnetic field H_r of 10 oe, the films required from 20 to 45 nsec for reverse magnetization. The reverse magnetization time decreased linearly with decreasing film thickness d . Electron microscopic examination showed that the films have a polycrystalline structure with an fcc lattice. Orig. art. has: 5 figures.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (Department of Physics, Moscow State University)

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L-8813-65
ACCESSION NR: AP4045291

SUBMITTED: 00

ATD PRESS: 3106

ENCL: 00

SUB CODE: EC, LE

ATD PRESS:
NO REF SOV: 004

ENCL: 00
OTHER: 004

Card 3/3

L 10612-65 ENG(j)/EWP(e)/EPA(e)-2/EWT(m)/EPT(n)-2/EPA(w)-2/EWP(j)/EWA(h)/EWP(t)/
EWA(l) Pc-l/Pq-l/Pt-l/Pu-l/Pab-2/Peb AFMD(t)/ASD(m)-3/ASD(a)-5/AS(mp)-2/AFETR/
SSD/ASD(p)-3/BSO/AFWL/ESD(gs)/ESD(t)/RAEM(t) RM/WH 8/0048/64/028/009/1483/1487

ACCESSION NR: AP4045305

AUTHOR: Krokshina, A.I.; Spivak, G.V.

TITLE: Disintegration of ceramics and glasses under ion bombardment/Report, Tenth
Conference on Cathode Electronics held in Kiev, 11-18 Nov 1963

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.9, 1964, 1483-1487

TOPIC TAGS: ion bombardment, glass, ceramic, surface geometry, structural property

ABSTRACT: The destruction of the surfaces of glass and ceramic materials by ion bombardment is discussed in general terms on the basis of experimental material previously published by G.V.Spivak and collaborators, and some new experimental material. The samples were bombarded in an apparatus previously described by G.V.Spivak, F.F.Kushnir and V.Ye.Yurasova (Izv.AN SSSR, Ser.fiz.23,744,1959; 25,707,1961) and were heated to temperatures as high as 1200°C. The discussion is illustrated with six optical and electron micrographs of bombarded surfaces. In some cases a grain structure could be perceived on the surface, the regions between the grains being eroded to a different extent than the grains themselves. Obliquely incident ions produced furrows having nothing to do with the structure of the material. It is

L 10612-65

ACCESSION NR: AP4045305

concluded that features of the eroded surface are frequently due to the uneven ion current distribution arising from an uneven distribution of surface potential, rather than to structural factors. In the case of multi-component ceramics, and particularly glass ceramics, structural transformations can occur in the surface layer of the sputtered specimen, and evidence of such transformations can be perceived in the damaged surface. Orig.art.has: 3 figures.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
(Physics Department, Moscow State University)

SUBMITTED: OO

ENCL: OO

SUB CODE: NP, MT

NR REF SOV: 007

OTHER: 000

2/2

L 50961-65 ENT(1)/EPA(s)-2/ENT(m)/EWP(1)/T/EWP(t)/EEC(b)-2/EWP(b) Pt-7/P1-4
 IJP(3) JD/GG

UR/0048/65/029/004/0626/0628

43
41
B

ACCESSION NR: AP5011445

AUTHOR: Pavlyuchenko, O. P.; Spivak, G. V.; Shakmanov, V. V.

TITLE: Concerning thin films²¹ prepared by cathod sputtering of ferrites /Report,
 Second All-Union Symposium on the Physics of Thin Ferromagnetic Films held in
 Irkutsk, 10-15 July 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 4, 1965, 626-628

TOPIC TAGS: ferromagnetic thin film¹⁸, ferrite, cathode sputtering

ABSTRACT: In view of the fact that cathode sputtering has been reported (G. V. Spivak, I.G.Sirotenko, and R.D.Ivanov, Izv. AN SSSR, Ser. fiz. 25, 581, 1961) to conserve the exact chemical composition of the initial material, this technique was employed to prepare films of the monoferrites $\text{NiO} \cdot \text{Fe}_2\text{O}_3$, $\text{CuO} \cdot \text{Fe}_2\text{O}_3$ and $\text{CoO} \cdot \text{Fe}_2\text{O}_3$. The resultant films were investigated to determine their structural and magnetic properties, which properties were then compared with those of the parent materials. Debye x-ray patterns were recorded to determine the crystal structure of the starting ferrites. The films were deposited on polished glass and on cleaved NaCl. Films of optimum thickness (300 Å) were examined in a transmis-

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ACCESSION NR: AP5011445

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sion electron microscope; in addition, electron diffraction patterns were recorded. Some of the diffraction patterns and micrographs are reproduced. The sputtering was realized in a setup with a thermal cathode providing an intense (about 3 A) discharge in xenon at a pressure of 5×10^{-3} torr. The specimen was connected at the third electrode. In view of their high resistance the ferrite specimens were coated on one side with silver to provide good electrical contact. Some thermal effects were noted, so that in general the film specimens were not identical in structure and parameters with the parent materials. The magnetic properties of the ferrite films were investigated in more detail by Galepov, who presented a report on the subject at the Irkutsk Symposium. Orig. art. has: 3 figures.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 00

ENCL: 00

SUB CODE: EM, 88

NR REF SOV: 001

OTHER: 001

Card 2/2

L 50977-65 EWT(1)/EWT(m)/EPA(sp)-2/EPF(c)/EPF(1)/EWA(d)/EPA(w)-2/EEG(t)/EPF(u)
 EPF(z)/EPF(b) Pab-10/Pr-h/Peb JD/AT

UR/0048/65/029/004/0629/0633

ACCESSION NR: AP5011446

AUTHOR: Dubinina, Ye.M.; Pyt'yeva, M.B.; Spivak, G.V.; Makhmud Eldin Saad

TITLE: On formation of Permalloy films by means of a high-vacuum ion source
 /Report, Second All-Union Symposium on the Physics of Thin Ferromagnetic Films
 held in Irkutsk 10-15 July 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 4, 1965, 629-633

TOPIC TAGS: ferromagnetic thin film, permalloy, ion source

ABSTRACT: The purpose of the work was to explore the feasibility of preparing thin films by means of a high-vacuum ion source. In principle the technique should allow of preparing films of any desired thickness and configuration without use of a mask and without danger of extraneous impurities. Moreover, the ion-source procedure has the potentiality of automation for purposes of series production of "standard" uniform films. The equipment employed for the experiments was the high-vacuum ion source installation developed in the authors' laboratory and shown schematically in the Enclosure. The design, operation and various parameters of the ion source installation are described and discussed. A number of curves

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ACCESSION NR: AP5011446

characterizing the variation of the ion current to the collector as functions of different factors (temperature, potential, electron beam current, etc.) are reproduced. Film preparation experiments were run with Permalloy. So far, in two hours operation there was obtained a 250 Å thick film, electron diffraction patterns from which indicate that its composition is at least similar to that of the initial Permalloy. Mass-spectroscopic studies are planned for the future to check the composition of the ion beam. Orig. art. has: 9 figures.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 01

SUB CODE: EM, EC

NR REF SOV: 002

OTHER: 000

Card 2/3

L 50977-65

ACCESSION NR: AP5011446

ENCLOSURE: 01

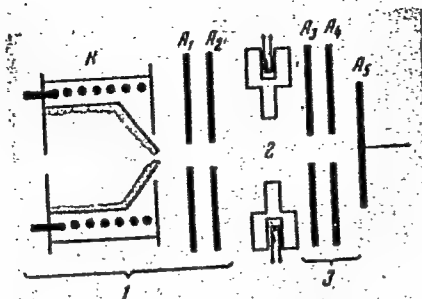


Diagram of the ion source installation:
 1 - electron gun with hollow cathode (K),
 2 - ionization space, 3 - ion-optical
 section; A_1 - A_4 - electrodes, A_5 - ion
 collector (the dielectric substrate on
 which the film is formed).

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L 50992-65 FWT(1)/EPA(s)-2/EWT(m)/EWP(1)/EWA(d)/T/EWP(t)/EEG(b)-2/EWP(z)/EWP(b) ⁵⁸
 Pt-7/P1-L IJP(c) JD/GG ⁵³
 ACCESSION NR: AP5011447 UR/0048/65/029/004/0634/0638

AUTHOR: Spivak, G.V.; Shelyakin, L.B.; Nikitina, T.N.; Yurasova, V.Ye.; Filippova, T.F.; Prokhorov, Yu.A.

TITLE: Magnetic properties of Permalloy films formed in ion bombardment /Report,
Second All-Union Symposium on the Physics of Thin Ferromagnetic Films held in
Irkutsk 10-15 July 1964/ ¹⁸ 11

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 4, 1965, 634-638

TOPIC TAGS: ferromagnetic thin film, permalloy, magnetic property ²¹

ABSTRACT: The work was undertaken in view of the growing use of thin films in electronics and the consequent need for new and better film preparation techniques. Preparation of films by ion bombardment has a number of distinctive features and advantages (G.V.Spivak, V.E.Yurasova, O.A.Rozhkova, and T.N.Nikitina, Izv. AN SSSR, Ser. fiz., 28, 1411, 1964, and other papers by the Spivak group). Primary among these is good correspondence of the composition of the film with that of the initial, sputtered material. One of the objections to the ion bombardment technique is that inert gas atoms, present in the discharge chamber, become imbedded in

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L 50992-65

ACCESSION NR: AP5011447

the film and impair its properties. In the present experiments a series of films of different types of Permalloy were prepared in glow and arc discharges in an inert gas atmosphere. The orienting field was provided by a pair of Helmholtz coils. The substrates were glass, glass precoated with quartz, aluminum, aluminum cleansed by ionic etching, and rock salt. The substrates were washed before installation in the apparatus and then further cleansed by the discharge before deposition of the films. The films were investigated as regards some of their magnetic properties and subjected to chemical analyses for comparison with the analytic composition of the initial sputtered materials. Electron micrographs and electron diffraction patterns (one of each is reproduced) indicate that the Permalloy films were polycrystalline with a fine-crystal structure. The films on uncleaned Al were of poor quality, but those on cleansed Al were similar to films deposited on glass. Some magnetic data on the films, including curves of the inverse switching time versus switching field, are given in tables and figures. The results show that given proper control of the sputtering conditions and parameters it is feasible to prepare by this technique Permalloy films with characteristics similar to those of films prepared by thermal evaporation; the attainable reproducibility is satisfactory: for example, the scatter of coercive force values in a series of films was less than 10%. "In conclusion, we express

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ACCESSION NR: AP5011447

our gratitude to R.V.Telesin, V.I.Kozlov, B.I.Sokolov, V.Yakovlev, and V.Kamkova for consultations and assistance in the work." Orig. art. has: 6 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: EM, EC

NR REF SOV: 004

OTHER: 004

Card 3/3

L 27641-66 EWI(1) IJP(c)

UR/0048/66/030/005/0749/0753

47

ACC NR: AP6015756 (A, N)

46

AUTHOR: Spivak, G.V.; Dyukov, V.G.; Sedov, N.N.; Nevzorov, A.N.

B

ORG: Physics Department, Moscow State University im. M.V.Lomonosov (Fizicheskiy fakul-
tet Moskovskogo gosudarstvennogo universiteta)

TITLE: Observation of transient processes in silicon diodes by means of a stroboscopic
emission microscope /Report, Fifth All-Union Conference on Electron Microscopy held in
Sumy 6-8 July 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 5, 1966, 749-753

TOPIC TAGS: electron microscopy, silicon diode, pn junction

ABSTRACT: In the introductory paragraphs note is made of the advantages of employing a stroboscopic or gating electron microscope for studying transient processes in semiconductors and observing the dynamics of microfields. In the work described in the present paper the stroboscopic microscope diagramed in the preceding report by the authors (see Abstract AP6015755) was used to observe the individual phases of establishment of direct current flow in silicon diodes. It is pointed out that the time resolution of the given electron microscope approaches the nanosecond range. A special simple resistance-capacitance circuit with a vacuum tube was employed to provide the

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ACC NR: AP6015756

requisite dc pulse repetition rate. Micrographs of the surface of a diffused silicon diode, of a p-n junction in a mesa-diode under - 40 V bias and of a section of an alloyed diode are reproduced in the text together with oscillograms of the dc pulse and the transient process in the case of one experiment. The effects revealed by the micrographs are discussed. Further experiments were concerned with investigating the influence of temperature on the structure of a p-n junction; the results are very briefly described: heating to 260°C resulted in a 200 ohm reduction of the back resistance of the diode. The authors are grateful to A.E. Yunovich for discussion of the results. [15]
Orig. art. has: 5 figures.

SUB CODE: 09, 20/
ATD PRESS: 5101

SUBM DATE: none/

ORIG REF: 002/

OTH REF: 001/

Card 2/2 *ce*

L 24125-66 EMP(e)/ENT(m)/ETC(f)/EWG(m)/EWP(j)/T/EWP(t) LJP(c) RDM/JD/EM/WH
 ACC NR: AP6008071 SOURCE CODE: UR/0032/66/032/002/0262/0263

AUTHOR: Spivak, G. V.

ORG: none

TTTC: Fifth Conference on Electron Microscopy

SOURCE: Zavodskaya laboratoriya, v. 32, no. 2, 1966, 262-263

TOPIC TAGS: optic conference, electron microscopy, germanium, silicon, microscope, lead compound, sulfide, selenide, cadmium sulfide, ferromagnetic material, epitaxial growing, PN junction, crystallization, polymer, semiconductor device

ABSTRACT: Applications of electron microscopy in physical, chemical, metallurgical, technological, biological and medical fields, electron optics and instrument manufacture were the general topics of about 250 papers presented at the Fifth Conference on Electron Microscopy. The conference was held 6-9 July 1965 in Sumy. In the field of physics, papers on the structure of thin films were of scientific interest. Papers in this category discussed the effect of electron irradiation on the crystal structure of vacuum condensed germanium and silicon (A. N. Pilyankevich, V. P. Zakharova, and V. N. Chugayev); formation of chemically deposited lead sulfide and

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ACC NR: AP6008071

lead selenide films (V. N. Vertsner, L. N. Biller, et al.); epitaxial growth of various (unnamed) films (L. S. Palatnik, V. M. Kosevich, V. M. Moskaev, et al.); vacuum condensation of CdS films (R. D. Ivanov, B. D. Galkin, V. N. Bunarev, et al.); and structure of thin ferromagnetic films (L. V. Kirenskiy of the Krasnoyarsk Institute of Physics, Siberian Department, AS USSR).

In the series of papers on instrument manufacture and electron optics, P. A. Stoyanov, E. A. Shulyak, V. N. Kaplichnyy, and other staff members of the Sumy Plant of Electron Microscopes and Electrical Automatic Equipment discussed an improved version of the UEMV-100 microscope; V. S. Gurin, G. D. Kisel', and V. M. Yaremenko reported on a new MES-100 microscope.

In the chemistry section, a study of great scientific interest was presented by G. I. Distler on the structure of the p-n junction in semiconductors by means of newly developed decoration techniques. Papers were also noted on a recently developed method of low-temperature etching to reveal morphological forms of polymers (V. M. Luk'yanovich), and

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L 24125-66
ACC NR: AP6008071

on the development of an ultramicroscopic observation technique of consecutive crystallization steps of glass components (F. K. Aleynikov).

In the metallurgical section, studies were presented on aging and superconductive alloys, phase identification, and analysis of crystal defects. [ATD PRESS: 4123-E]

SUB CODE: 20, 07 / SUBM DATE: none

Card 3/3 *HW*

L 33142-66 EWT(m)/EWP(e)/EWP(t)/ETI/EWP(k) IJP(c) JD/JH
 ACC NR: AP6015352 (N) SOURCE CODE: UR/0226/66/000/005/0067/0073

AUTHOR: Gladneva, L. I. (Moscow); Yefremenkova, V. I. (Moscow); Lebedeva, L. S. (Moscow); Spivak, G. V. (Moscow); Shelamov, V. A. (Moscow); Yurasova, V. Ye. (Moscow)

ORG: none

TITLE: Ascertaining the structure of sintered materials of the Mo-MoO system by ion bombardment. Report presented at the Fifth All-Union Conference of Electronic Microscopy in Sumy, July 1965

SOURCE: Peroshkovaya metallurgiya, no. 5, 1966, 67-73

TOPIC TAGS: ~~metal~~ metal oxide system, sintered aluminum powder, powder metallurgy, ~~metal powder~~ electron microscopy, ion bombardment

ABSTRACT: A study of the structure of sintered aluminum powder material by ion bombardment is of practical significance for the investigation of materials obtained by means of powder metallurgy. The method is suggested for use for manufacturing samples prior to electron-microscopic investigations. Analysis of microphotographs shows that the base of SAP material is a cellular grid consisting of oxide particles bounded by aluminum pseudograins. Orig. art. has: 8 figures. [Based on author's abstract.] [AM]

SUB CODE: 11,20/ SUBM DATE: 11 Aug65/ ORIG REF: 002/ OTH REF: 001

LS
 Cord 1/1

L 27642-66 EWT(1) IJP(c)

ACC NRAP6015755 (A, N)

SOURCE CODE: UR/0048/66/030/005/0742/0748

AUTHOR: Spivak, G.V.; Dyukov, V.G.; Sedov, N.N.; Nevzorov, A.N.

ORG: Physics Department, Moscow State University im. M.V.Lomonosov (Fizicheskii fakultet Moskovskogo gosudarstvennogo univesiteta)

TITLE: A stroboscopic secondary-emission electron microscope Report, Fifth All-Union Conference on Electron Microscopy held in Sumy 6-8 July 1965

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 5, 1966, 742-748

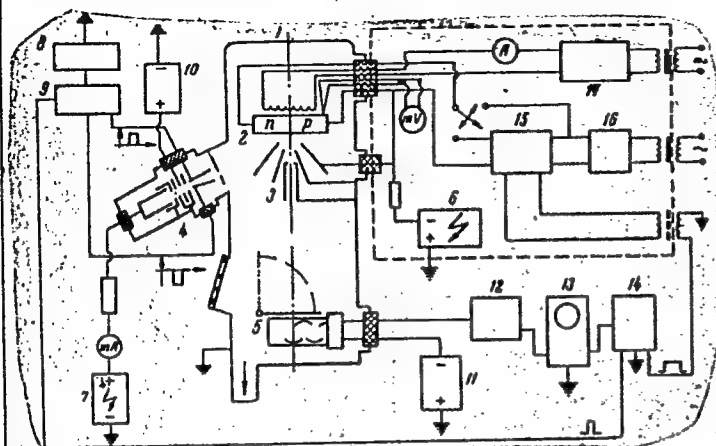
TOPIC TAGS: electron microscope, electron microscopy, silicon diode

ABSTRACT: The purpose of a stroboscopic or gating electron microscope is to observe the successive quasi-instantaneous stages of dynamic processes; if the frequency of the investigated process is synchroized with the gating there will be obtained stationary images of the surface structure regardless of the frequency characteristics of the screen. In the case of an emission system with a three-electrode objective a stroboscopic regime can be realized in different ways: supply of the microscope with high-voltage pulses, modulation of the potential on the focusing electrode, or deflection of the beam by means of appropriate deflecting plates. In the instrument employed in the present work pulse modulation was employed (V.G.Dukov, G.V.Spivak, N.N.Sedov, and V.V.Evdokimov, Proc. III Europ. Reg. Conf. on Electron Microscopy, V.A., p. 283, Prague, 1964). A block diagram of the microscope and associated electronic equipment

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ACC NR: AP6015755



Block diagram of the stroboscopic secondary emission microscope with high time resolution: 1) microscope column, 2) specimen with thermocouple and heater, 3) optics of the apparatus, 4) pulsed ion gun, 5) screen and secondary-electron multiplier, 6) high-voltage rectifier (0 to 50 kV), 7) 5 kV rectifier for the ion source, 8) power supply for the pulse amplifier, 9) strobe pulse amplifier, 10) power supply for ion beam focusing, 11) 5 kV rectifier for the secondary-electron multiplier, 12) wide-band ampli-

fier, 13) oscillograph, 14) generator of shifted pulses, 15) pulse shaping circuit, 16) rectifier supplying bias to the specimen and feeding the shaping circuit, 17) rectifier supplying the specimen heater. The section outlined by dashes operates at the high potential.

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ACC NR: AP6015755

is shown in the figure. Some of the parameters of the equipment and particularly of the ion source used for inducing the secondary emission are described in the paper. The microscope was used for investigation of a number of transient processes on the surface of semiconductors, junctions, and the like. Static and stroboscopic micrographs of the surface of a diffused silicon diode are reproduced; in the stroboscopic regime there is revealed (as a dark band) the region of potential drop in the base of the diode. Orig. art. has: 6 figures. [15]

SUB CODE: 09, 20/ SUBM DATE: none/ ORIG REF: 009/ OTH REF: 002/ ATD PRESS: 500/

THE CODE: 09, 20/ SUBM DATE: none/ ORIG REF: 009/ OTH REF: 002/ ATD PRESS: 500/

Card 3/3 cc

SPIVAK, Iyan Andreyevich; KAMINSKAYA, N., red.; TROYANOVSKAYA, N., tekhn.
red.

[Descendants of Korchagin] Potomki Korchagina. Moskva, Gos.izd-vo
polit.lit-ry, 1961. 142 p. (MIRA 14:11)
(Russia--Social conditions)

100, 1.

Central Union of the 1042 check of automobiles in Paris.
Aut. Transp. 43 no. 9/17 19 5 1965. (MIR 18/9)

SPIVAK, I.I., uchitel'.

How to make vegetable and fruit models. Biol. v shkole no. 3:86-
88 My-Je '58. (MIRA 11:8)

1. Srednyaya shkola No. 9, g. Groznyy.
(Fruit--Models)
(Vegetables--Models)

BLAZHEVSKIY, Ye.V., dvazhdy Geroy Sotsialisticheskogo Truda; VOVCHENKO, I.V., kand. sel'khoz. nauk, zasl. agronom Ukr.SSR; VOROB'YEV, N.Ye., st. nauchn. sotr.; GESHELE, E.E., doktor biol. nauk, prof.; ZUBRITSKIY, A.A., agronom; KISEL'GOF, Z.S., inzh., zasl. mekhanizator sel'skogo khoz. Ukr.SSR; KLYUCHKO, P.F., kand. sel'khoz. nauk; KORCHAGIN, A.Ye.; LEBEDEV, Ye.M., st. nauchn. sotr.; NASYPAYKO, V.M., kand. sel'khoz.nauk; PIKUS, G.P., kand. sel'khoz.nauk; REKACH, V.N., doktor sel'khoz. nauk, prof.; SPIVAK, I.I., zootekhnik; TEMCHENKO, L.V., kand. sel'khoz. nauk; FEDULAYEV, A.A., agronom; YAKOVENKO, V.A., kand. tekhn.nauk; KITAYEV, I.A., kand. sel'khoz. nauk, red.; MUSIYKO, A.S., akademik, red.; VINNITSKIY, S.P., red.; MOLCHANOVA, T.N., tekhn. red.

[For high corn yields] Za bol'shiu kukuruzu. [By] E.V. Blazhevskii i dr. Odessa, Odesskoe knizhnoe izd-vo, 1962. 173 p. (MIRA 16:7)

1. Zven'yevoy kolkhoza im. Gor'kogo Kotovskogo rayona na Odesshchine (for Blazhevskiy). 2. Glavnyy agronom sovkhoza "Bessarabskiy" (for Korchagin). 3. Ukrainskaya akademiya sel'skokhozyaystvennykh nauk (for Musiyko). (Ukraine--Corn (Maize))

SPIVAK, I.I., kandidat tekhnicheskikh nauk.

Computation of the luminous intensity of aberrationless lenses
with prismatic elements. Svetotekhnika 2 no.3:15-19 My '56.

(MLRA 9:8)

1. Vsesoyuznyy svetotekhnicheskiy institut.
(Lenses)

SPIVAK, I.I., kandidat tekhnicheskikh nauk.

To the editor of "Svetotekhnika." Svetotekhnika 2 no.3:28 My '56.

(MLRA 9:8)

(Optics)

SPIVAK, I.I., kand.tekhn.nauk

Structure of light beams of two-lens systems. Svetotekhnika 3
no.10:16-20 0 '57. (MIRA 10:10)

1. Vsesoyuznyy svetotekhnicheskiy institut.
(Beacons)

SPIVAK, I.I., kand.tekhn.nauk

Calculating light intensity of binary lens systems. Svetotekhnika
4 no.11:16-20 N '58. (MIRA 11:11)

1. Vsesoyuznyy svetotekhnicheskii institut.
(Lenses)

SPIVAK, I.I., kand.tekhn.nauk

"Luminaires" by V.V.Trembach. Reviewed by I.I.Spivak. Svetotekh-
nika 5 no.7:31 J1 '59. (MIRA 12:9)
(Lighting--Equipment and supplies)
(Trembach, V.V.)

SPIVAK, Izrail' Moiseyevich; TYUMENEVA, S.T., inzh., red.; FREGER, D.P.,
tekhn.red.

[An electric-light instrument for checking screw threads]
Electrosvetovoi pribor dlia kontrolya rez'b. Leningrad, 1956.
2 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy.
Informatsionno-tekhnicheskii listok, no.9. Kontrol' kachestva
produktsii) (MIRA 10:12)
(Electric instruments) (Screw threads)

SPIVAK, I. P.

SPIVAK, V. V., and I. P. SPIVAK

O podbere gorizonta'nogo opere'n'ia s shaibami na kentsakh razv'azha.
(Tekhnika vozdushnogo flota, 1940, no. 7, p. 59-71, tables, diagrs.)

Title tr.: Selection of a horizontal tail surface wit tip fins.

TL504.Th 1940

SC: Aeronautical Sciences and Aviation in the Soviet Union, Library of
Congress, 1955.

AYLINTSON, Ye.G.; MAHLEN, P.P.; LUK, V.; STEPHEN, L.M.

Effect of ultrasonic waves on the formation of carbide grains during the quenching of hardened carbon steel. Fiz. met. i metalloved. 17 no.4:624-627 Ap '64. (MIRA 17:8)

1. Yestestvenno-nauchnyy institut pri Fernskom gosudarstvennom universitete imeni A.M. Gor'kogo.

SPIVAK, I. V.

"Mechanizing the Process of Pre-Pressing Star Sprockets and Arch Siphons," Ogneupory, No. 4,
1949.

Winning Generation
Shaping 8/1/10

879. Mechanization of repressing "star" bricks and runner bricks.—I. V. SRIYAK (*Ognesovoy*, 16, 174, 1940). In 1940 the author proposed a mechanical press for repressing runner bricks and in 1947 one for "star" bricks. Both presses are of fairly simple construction, are easily operated, and give a high output. One press produces 13,000 runner bricks per shift and the other 2,000 "star" bricks per shift. Each press requires two workers. It has been decided to introduce these presses throughout all Russian plants making casting-pit refractories. The structure of both presses is described in detail. (6 figs.)

BCS

643. A press for rubber tubes and sheets. I.—V. SERVAK (Ognesopry, 24, 177, 1931).
A press newly installed in a Russian plant and its operation are described in detail. It
will produce 6,000 tubes/shift and is operated by 7 men. (5 figs.)

BCS

1148. The Spivak press for end runner bricks.—I. V. SPIVAK (*Ognesopoy*, 16, 430, 1951). The press is for re-pressing end runner bricks of all types from an extruded blank. The merits of the press are: high efficiency (17 strokes/min.); devices for regulating the size of the product; all types of end runners can be pressed in one mould. (4 figs.)

1. SPIVAK, FH, S.

2. USSR (600)

4. Gypsum

7. Seasonal dynamics of the salt cycle in soda solonetz soils in
Connection with the application of gypsum, Trudy UNDISOZ 6, 1951

9. Monthly List of Russian Accessions, Library of Congress, May 1953, Uncl.

SPIVAK, Kh. S.

Influence of the application of gypsum on the conversion of phosphates in saline soils. P. O. Dmitrenko, and Kh. S. Spivak. *Doklady Akad. Nauk Ukr. R.S.R.* 1956, 594-7. Barley was planted and the H₂O-sol., citrate-sol., and insol. P₂O₅ were analyzed at soil depths of 0-20, 20-40, and 40-60 cm. The application of gypsum (I) means that the P be-

comes more available to the plants, yet its mobility is decreased. This phenomenon is especially pronounced at 40-cm. depth. It is explained that a series of reactions takes place. I also decreases the amt. of H₂O-sol. Na and Fe, so that actually the whole soil equil. is upset.

Werner Jacobson

SPIVAK, Kh.S., kand.sel'skokhoz.nauk

Effect of gypsum application to Solonetz soils on the chemical
composition of underground waters. Nauch.trudy UASHN 9:19-21
'59. (MIRA 14:3)
(Gypsum) (Solonetz soils) (Water, Underground)

SPIVAK, L.

Conference of organizations for planning and design and of
synthetic fiber plants. Khim.volok no.4:80 '62. (MIRA 15:8)

1. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy
iskusstvennogo volokna.

(Textile fibers, Synthetic--Congresses)

NESTERENKO, I., inzh.; SPIVAK, L., inzh.

Design of a large-span roof made of slabs sealed with poured
concrete. Prom.stroi.1 inzh.soor. 4 no.5:19-24 S-0 '62.
(MIRA 16:1)

(Roofing, Concrete)

RUSSIAN, A. I. VASILEV, G. I.

"Effect of Speed and Degree of Plastic Tension on the Relaxation and the Subsequent Deformation of Metals Part II", p. 146, Fizika Metallov i Metallovedeniye, 2, No. 1, 1956.

SPIVAK, L.A.
SPIVAK, L.A.

Treating paroxysmal tachycardia with antiepileptics. Vrach.delo
no.12:1335 D '57. (MIRA 11:2)

1. Kafedra fakul'tetskoy terapii (zav. - prof. S.Ya.Shteynberg)
Khar'kovskogo meditsinskogo instituta.
(HEART--PALPITATION)
(ANTISPASMODICS)

SPIVAK, L.I.

Pendulum-like knee reflex. Nevropat.pskhiat., Moskva 20 no.1:56-
57 Jan-Feb 51. (GIML 20:6)

1. Captain, Medical Corps. 2. Of the Department of Psychiatry (Head-
Prof.N.I.Bondarev, Major General, Medical Corps), Military Medical
Academy imeni S.M.Kirov.

SPIVAK, L.I.

Changes in the knee reflex in depressive and hypomanic states. Zhur.nevr. i psikh. 53 no.6:422-428 Je '53. (MLBA 6:6)

1. Psikhiatricheskaya klinika Voenno-meditsinskoy akademii imeni S.M.Kirova. (Reflexes)

SPIVAK, L. I.

"The Problem of Clinic During Chronic Poisoning With Tetraethyl Lead",
Military-Midical Journal, No. 8, p 37, Aug 1955.

SPIVAK, L.I. (Leningrad)

On the problem of neuroses. Zhur.nevr. i psikh. 55 no.7:533-534
'55. (MLRA 8:10)

(NEUROSSES,
concepts)

SPIVAK, L.I.

✓ 3894. Disturbances of higher nervous function in intoxication with tetraethyl lead. N. N. Timofeev, L. I. Spivak, and I. M. Demchenko. *Zh. Nevropatol. Psikhiat.*, 1955, 55, No. 10, 781-789; *Referat. Zh. biol. Khim.*, 1956, Abstr. No. 14234. — The higher nervous function was studied in persons with chronic tetraethyl lead poisoning. There were seen to be disturbances in the strength and rapidity of the excitant and inhibitory processes in the cerebral cortex, and also of the habitual interaction between signalling systems. Phased stages were observed. There appeared to be disturbances of the interrelation between cerebral cortex and the underlying sections of the c.n.s. (Russian)

C. C. HAYWARD

3

100
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Reflexy v norme i patologii (The knee reflex in normal and pathological
state) Leningrad, 1957.
101, (3) p. illus., diagrs., tables (Biblioteka fraktsionnogo vracha)
"Literatura": s. 94-102.

AVS

SPIVAK, L.I.

Intraosseous administration of drugs and blood in psychiatric practice.
[with summary in French]. Zhur.nevr. i psikh. 58 no.2:215-217 '58.

(MIRA 11:5)

1. Kafedra psikhiiatrii (zav. - prof. A.S. Chistovich) Voenno-meditsinskoy akademii imeni S.M. Kirova.

(MENTAL DISORDERS, therapy,

intra-osseous drug & blood admin. (Rus))

(BLOOD TRANSFUSION,

intra-osseous in psychiatry (Rus))

(BONE AND BONES,

intra-osseous drug & blood admin. in psychiatry (Rus))

SPIVAK, L.I.

P.P. Pelekhin's dissertation on "The nature of neuroses"; material
on the history of Russian psychiatry. Zhur.nevr. i psikh. 85
no.11:1389-1391 N'58 (MIRA 12:1)

1. Kafedra psikhiiatrii (nachal'nik - prof. A.S. Chistovich)
Voyenno-meditsinskoy ordena Lenina akademii im. S.M. Kirova.
(PSYCHOSES, history
origin of psychoses, 19th century dissertation (Rus))

SPIVAK, L. I.

"Problems of military psychiatry in armies of foreign countries" - p. 103

Voyenno Meditsinskiy Zhurnal, No. 3, 1962

CZECHOSLOVAKIA

Lt Col of Medical Corps L.I. SPIVAK [USSR Armed Forces?] translated by
Lt Col MD Jan HES [affiliation not stated.]

"Problems of Military Psychiatry in Foreign Armies (Review of Foreign Literature.)"

Prague, Vojenske Zdravotnické Listy, Vol 31, No 5, Oct 62; pp 231-232.

Abstract: Presumably review of published data; no bibliographic ref's
but many Western names interspersed in text. Statements such as "67.3%
of US strategic flyers scheduled for transcontinental flights with atom
or hydrogen bombs are suffering from neuroses (B. Berri, I. Skobba.)"
Most comments pertain to US military experiences in WW II or Korea;
nuclear war preparation; brief comments about military action in the
tropics.

1/1

SPIVAK, L.I. (Leningrad)

Prehistory of the study of psychopathies. Zhur. nevr. i psikh.
63 no.8:1249-1251 '63. (MIRA 17:10)

SERGIYENKO, S.R.; IZMAYLOV, N.A.; SPIVAK, L.L.; GALICH, P.N.

Potentiometric methods of investigation of high-molecular weight
compounds in petroleum. Zhur.anal.khim.10 no.5:315-322 S-O '55.
(MLRA 9:1)

1. Institut nefti AN SSSR, Moskva i Khar'kovskiy gosudarstvenny
universitet imeni Ger'kego.
(Potentiometric analysis) (Acidity) (Petroleum)

SPIVAK, L. L.

4034. Potentiometric methods of studying high molecular compounds of petroleum. II. Potentiometric determination of saponification values in solutions of petroleum resins. S. R. Sergienko, P. N. Galich, N. A. Izmailov and L. L. Spivak (Inst. of Petroleum, Acad. Sci., USSR, Moscow). *Zhur. Anal. Khim.*, 1956, 11 (6), 731-734. The sample is dissolved in a mixture of ethanol and benzene (2:5), then mixed with a 5 to 10-fold excess of ethanolic 0.1 N KOH and heated on a water bath under a reflux condenser for 1 hr. without admission of CO₂. The hot soln. is titrated potentiometrically with 0.1 N HCl in a CO₂-free atmosphere, glass and calomel electrodes being used.

G. S. SMITH

SPIVAK, L. L.

588. Potentiometric methods of studying high-molecular petroleum compounds. III. Potentiometric determination of peroxide numbers. S. R. Sergienko, E. N. Galich and L. L. Spivak (Inst. of Petroleum, Acad. Sci. USSR, Moscow). *Zhur. Anal. Khim.*, 1957, 12 (1), 139-142. The sample containing peroxide compounds is dissolved in 20 ml of absolute isopropyl alcohol and 2 ml of glacial acetic acid and then boiled for 5 min. with 10 ml of a saturated soln. of NaI in absolute isopropyl alcohol. The soln. is mixed with 5 ml of water in a cell containing a platinum indicator electrode, a connection to a S.C.E. and an inlet for N₂ gas to stir the soln. Alternatively, a closed vessel with a stirrer may be used. Potentiometric titration is carried out with 0.1 N Na₂S₂O₄.

G. S. Surin

NS 1/1

S 423d

SHIVAY, L.L., Cand. Chem. Sci. -- (Dis.) "Effect of aprotic
and mixed solvents ^{up} on the relative force of strength of
acids." Moscow, 1958, 17 pp (Min of Higher Education
USSR. Khim'kov Order of Labor Red Banner State Univ in
A.V. Gor'kiy) 100 copies (KL, h2-58, 113)

- 11 -

SHKODIN, A.M.; ALEKSANDROV, V.V.; SPIVAK, L.L.; VAYL', Ye.I.; CHERNYI, V.S.;
TITOV, Ye.V.; IVANOVA, Ye.F.; KRUGLYAK, Yu.A.; RYBKIN, Yu.F.

Nikolai Arkad'evich Izmailov, 1907-1961. Ukr.khim.zhur. 28
no.2:271-282 '62. (MIRA 15:3)
(Izmailov, Nikolai Arkad'evich, 1907-1961)

IZMAYLOV, N.A. [deceased]; SPIVAK, L.L.

Thermodynamic properties of electrolytes in nonaqueous solutions.
Part 12. Effect of aprotic solvents on the relative strength
of acids. Zhur. fiz. khim. #6 - no.4:757-764 Ap '62.
(MIRA 15:6)

1. Khar'kovskiy universitet.
(Solvents) (Acids)

IZMAYLOV, N.A. [deceased]; SHIVAF, L.I.

Thermodynamic properties of electrolytes in nonaqueous solutions. Part 13. Zhur. fiz. khim. 36 no.6:1158-1163 Ja'62
(MIRA 17:7)

1. Leningradskiy universitet.

I 16921-63 EPR/EWT(m)/EWP(j)/EPF(c)/BDS ESD-3 Ps-4/Pc-4/Pr-4 RM/WW/RH/JW
S/076/63/037/004/011/029

AUTHOR: Izmaylov, N. A. (Deceased), Chernyy, V. S., Spivak, L. L. 76
TITLE: Thermodynamic properties of non-aqueous electrolyte solutions. ||
XIV. Calculation of the transport energy of acids from one solvent
to another

PERIODICAL: Zhurnal fizicheskoy khimii, V. 37, No. 4, 1963, 822-828

TEXT: The values for $\Delta pK = \lg K_{H_2O} - \lg K_M$ of various acids in alcohols, ammonia, and formic acid are compared with those for $\lg \gamma_0 H^+$, the transolvation energy of the proton. The changes in the transfer energy of acid anions and of non-dissociated acids are calculated from solubility data. On the basis of the results which are obtained an attempt is made to calculate the values for ΔpK from the change in transfer energy of the proton ($\lg \gamma_0 H^+$), anion ($\lg \gamma_0 A^-$), and non-dissociated molecules ($\lg \gamma_0 mol$). It is shown that these data may serve for the estimation of the change in strength of the acids on passing from one solvent to another. There are 6 tables.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet (Kharkov State University)

SUBMITTED: April 14, 1962

Card 1/1

ALEKSANDROV, V.V.; SPIVAK, L.L.; ZAKHARCHENKO, L.K. (Khar'kov)

Dissociation constants of some acids in mixed solvents methanol-
benzene and methanol-benzene-water. Zhur. fiz. khim. 39 no. 1:
58-63 Ja '65 (MIRA 19:1)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo.
Submitted December 14, 1963.

И.И. ШИШОВ, И.А. КИЗЬКО, В.Д. СЕДИХОВ, Л.Л. ГРИГОРЬЕВ, Н.Н.

The electrochemical measurements in a methanol - benzene - water mixture.
 Zhuravskaya, I. I. *ibid.* 39 no. 7-1995-1593 1965. (MIRA 18:8)

14-00000. 37 no. 7-5925-599 31 165.

(MIRA 18:8)

1. Kharkovskiy gosudarstvennyy universitet, Institut mono-
grafii.

1945-1950

[illegible]

Experimental determination of the time constant of a d.c. motor
with independent excitation. Elektrichestvo no.5:65-71 S '64.
(MIRA 17:10)

EWP(r)/EWP(q)/EWT(m)/BDS--AFFTC/ASD/APGC--JD

L 10791-63

ACCESSION NR: AP3000913

S/0279/63/000/002/0124/0129 56

AUTHOR: Ayzentson, Ye. G. (Perm'); Spivak, L. V. (Perm')

TITLE: Effect of ultrasonic vibrations on the isothermal decomposition of KhVG austenitic steel 16 4/6

SOURCE: AN SSSR. Izv. otd. tekhn. nauk. Metallurgiya i gornoye delo, no. 2, 1963, 124-129

TOPIC TAGS: austenite decomposition, tool steel, ultrasound effect, residual austenite, hardness

ABSTRACT: Specimens (30-mm long, 9 mm in diameter) of KhVG tool steel (0.95% C, 1.1% Mn, 0.24% Si, 1.22% Cr, and 1.58% W), annealed in a salt bath at 1000 or 900C for 20 min, were transferred to other baths with temperatures of 250 or 450C, held for 2 min, and then subjected to ultrasonic vibrations with a frequency of 20.5 kc at amplitudes of 3, 10, or 18 μ applied directly to specimens for 10 to 120 min. In specimens annealed at 1000C, ultrasound at an amplitude of 3, 10, or 18 μ , applied for 10, 30, 60, or 90 min at 250C, was found to refine martensitic

Card 1/3_L

L 10791-63
ACCESSION NR: AP3000913

structure. The amount of residual austenite and hardness ($R_c = 62-63$) were not affected. Ultrasound at 10 and 18 μ amplitude, applied at 250C for 60 or 120 min, accelerated the decomposition of austenite in specimens annealed at 900C, while ultrasound at 3 μ amplitude applied under the same conditions delayed the decomposition. In the same specimens, only ultrasound at an amplitude of 18 μ applied for 60 and 120 min increased the hardness by 2-3 and 5-6 R_c . Ultrasound applied for 15 or 30 min at 450C to specimens annealed at 1000C did not affect the decomposition of austenite. Longer (60, 90, or 120 min) treatment with ultrasound at an amplitude of 10 or 18 μ delayed decomposition and increased hardness by 6 to 7 R_c . Decomposition of austenite in specimens heated to 900C and treated with ultrasound at 450C generally followed a pattern similar to that observed in the previous case, except that decomposition started after treatment for 15 min and hardness increased by only 2-3 R_c . Ultrasound at a 3 μ amplitude accelerated the decomposition. Thus, in isothermal decomposition of austenite, ultrasonic vibrations at an amplitude of 10 or 18 μ increase the stability of austenite at 450C, but lower it at 250C, while amplitudes of 3 μ have the opposite effect. Orig. art. has: 5 figures.

Card 2/32

L 27261-65 ENT(m)/EWA(d)/T/ENP(t)/ENP(b)/ENP(1)/EWA(h) — Feb MJW/JD

S/0126/64/017/004/0624/0627

ACCESSION NR: APL034064

AUTHORS: Ayzentson, Ye. G.; Malinen, P. A.; Spivak, L. V.; Utrobina, I. K.

TITLE: Effect of ultrasonic oscillations on carbide grain formation during annealing of quenched carbon steel

25
19
B

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 4, 1964, 624-627

TOPIC TAGS: annealing, quenching, ultrasonic vibration, carbon steel/U12 steel

ABSTRACT: The effect of ultrasonic oscillations on carbide formation was investigated in U12 steels during annealing at 680C. The 10-mm diameter steel specimens were quenched from 960C temperature in oil and screwed on the waveguide of a magnetostrictive vibrator. At 20.5-kc frequency standing waves of 10μ amplitude were created in the specimen. After the test, longitudinal sections were sliced off from the specimen and the microstructure was analyzed at 2000 magnification. After 1 hour of annealing and ultrasonic oscillations, the microstructures indicated, on the average, larger carbide particle sizes with greater distances between each carbide particle than in the control specimens. A graphical plot of the number of carbide particles versus annealing time shows that the effect of

Card 1/2

L 27261-65

ACCESSION NR: AP4034064

ultrasonic oscillations first increases, reaches a maximum, and subsequently decreases. For a given test duration time, the particle distribution falls sharply from the end of the specimen until it reaches a constant value at a distance of 40 mm. These results show that ultrasonic oscillations promote coagulation of carbides in U12 steels. Orig. art. has: 4 figures.

ASSOCIATION: Yestestvenno-nauchnyy institut pri Permskom gosuniversitete im. A. M. Gor'kogo (Natural Science Institute, Perm State University)

SUBMITTED: 16Apr63

ENCL: 00

SUB CODE: MM

NO REF SOV: 007

OTHER: 001

Card 2/2

L 63331-65 EWP(k)/EWP(z)/EWA(c)/EWT(l)/EWT(m)/EWP(h)/T/EWA(d)/EWP(t) PF-1/Pi-1
 ACCESSION NR: AP5017472 MJW/JD UR/0370/65/000/003/0123/0127
 669.017.3

34
 B

AUTHOR: Ayzentson, Ye. G.; Spivak, L. V.; Utrobina, I. K.

TITLE: Isothermal decomposition of the austenite of KhVG steel in an ultrasonic field

SOURCE: AN SSSR. Izvestiya. Metally, no. 3, 1965, 123-127

TOPIC TAGS: isothermal decomposition, decomposed austenite, supercooled austenite, ultrasonic vibration, bainitic structure

ABSTRACT: The present work is a continuation of a previous investigation which showed that ultrasonic vibrations exert a definite and not always unambiguous effect on the decomposition of supercooled austenite of KhVG steel (0.99% C, 0.25% Si, 0.25% Mn, 0.018% P, 0.019% S, 1.03% Cr, 0.15% Ni, 1.56% W): at 450°C the vibrations with amplitudes of 10 and 18 μ increase the stability of the austenite while at 250°C they contribute to its decomposition. These findings were obtained on the basis of a qualitative comparison of the microstructures and roentgenograms of specimens with and without exposure to the ultrasound. In this connection, it was of interest to investigate the effect of ultrasonic vibrations on the isother-

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L 63331-65

ACCESSION NR: AP5017472

mal decomposition of austenite over a broader range of temperatures and to establish quantitative ratios. Accordingly the authors exposed specimens of this steel to ultrasonic vibrations with 18 μ amplitude in salt baths at temperatures of 700, 550, 500, 450, and 300°C. Transverse microsections of the specimens taken at the sites of maximum stresses were subjected to diffraction studies at room temperature. The amount of undecomposed austenite was estimated according to the reflexes (111) of austenite and (110) of alpha-phase. In addition, the microhardness of the decomposition products was determined by plotting frequency curves on the basis of measurements for every individual case. Microstructural examination revealed that ultrasonic vibrations in different temperature regions differently affect the austenite. At 700°C they inhibit the decomposition of austenite; at 550°C they lead to a reduction in the amount of residual austenite in specimens cooled to room temperature, while at 450°C they produce an opposite effect, and at 300°C they contribute to the decomposition of austenite. This is attributed by the authors to the mechanism of transformation in each temperature region. For supercooled austenite the effect of ultrasonic vibrations is expressed in the form of a finer bainitic structure. Orig. art. has: 5 figures.

ASSOCIATION: none

SUBMITTED: 02Apr64

NR REF SOV: 001

ENCL: 00

OTHER: 000

SUB CODE: MM, SS

Card 2/2

L 55140-65 EWT(m)/EWA(d)/T/EWP(t)/EWP(b)/EWP(z)/EWA(h)/EWA(c) Feb MJW/JD

ACCESSION NR: AP5015823

UR/0148/65/000/006/0127/0130

669.011.7:621.034.4-8

21
20
B

AUTHOR: Ayzentson, Ye. G.; Spivak, L. V.

TITLE: Effect of ultrasonic vibration on austenite grain growth during annealing 16

SOURCE: IVUZ. Chernaya metallurgiya, no. 6, 1965, 127-130

TOPIC TAGS: steel, steel treatment, austenite grain, grain growth, ultrasonic treatment/U12 steel

ABSTRACT: The effect of treatment by ultrasonic vibration at 20.5 kc on the grain growth during subsequent annealing in austenite of U12 steel (1.15% C, 0.20% Mn, 0.32% Cr, 0.25% Si) has been investigated. Specimens 10 mm in diameter were treated with ultrasound at 850, 900, or 950C for 10-40 min, air cooled, and then annealed at 900-1200C for 4 hr. It was found that the grain size of specimens treated with ultrasound is, as a rule, larger than that of untreated specimens. Electric resistivity increases under the effect of ultrasound, which weakens grain boundaries and lowers strength and ductility

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L 55140-65

ACCESSION NR: AP5015823

However, subsequent annealing restores the strength and increases the elongation 15—20% over that of untreated specimens. Ultrasonic treatment followed by annealing changes the grain boundaries of austenite and increases the space between pearlitic lamellae. It reduces the rate of austenite grain growth during high-temperature annealing and lowers the microhardness of annealed specimens. The effect of ultrasonic vibration may be explained by the formation of submicroscopic distortions at grain boundaries which absorb various impurities. Orig. art. has: 5 figures. [ND]

ASSOCIATION: Yestestvenno-nauchnyy institut pri Permskom gosudarstvennom universitete (Natural-Sciences Institute, Perm State University)

SUBMITTED: 06Jul64

ENCL: 00

SUB CODE: MM

NO REF SOV: 007

OTHER: 000

ATD PRESS: 4025

Card 2/2

ACC NR: AP7002547

SOURCE CODE: UR/0413/66/000/023/0027/0027

INVENTOR: Ayzentson, Ye.G.; Bobrova, S.N.; Spivak, L.V.

ORG: none

TITLE: Method of heat treatment of steel. Class 18, No. 189005

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 23, 1966, 27

TOPIC TAGS: ~~STEEL~~ ^{METAL} heat treatment, ~~steel normalization~~, steel ultrasonic treatment, ~~steel refrigeration~~ ANNEALING, COOLING, REFRIGERATION, STEEL STRUCTURE

ABSTRACT: This Author Certificate introduces a method of heat treatment of steel which consists in annealing followed by air cooling and refrigeration. To ensure their dimensional stability, the steel parts are subjected to ultrasonic treatment prior to refrigeration. [ND]

SUB CODE: 13/ SUBM DATE: . 18Jan65 / ATD PRESS: 5113

Card 1/1

UDC: 621.785.92:621.9.048.6:621.789

SPIVAK, L.V., starshaya operatsionnaya sestra

Decreasing alcohol consumption in surgery. Klin. khir. no.10:76
0 '62. (MIRA 16:7)

1. Kafedra khirurgii (zav.- prof. D.F. Skripnichenko) stomato-
logicheskogo fakul'teta Kiyevskogo meditsinskogo instituta i
1-ya Podol'skaya klinicheskaya rayonnaya bol'nitsa, Kiyev.
(SURGERY, ASEPTIC AND ANTISPETIC)
(ETHYL ALCOHOL)

SPIVAK, M.

Monetary payment of wages on collective farms in the Ukraine. Sots.
trud 5 no.8:19-25 4g '60. (MIRA 13:11)

1. Ministr sel'skogo khozyaystva USSR.
(Ukraine--Collective farms--Income distribution)

SPIVAK, M., podpolkovnik.

Practical realization of one of the regulations; response to Lt.
Colonel S. Abrosimov's article "Voennyi vestnik," no.10, 1955.
Voen.vest. 36 no.1:67-69 Ja '56. (MLRA 9:8)
(Russia--Army--Infantry)
(Abrosimov, S.)

SPIVAK, M.

Selection of optimal speed in approaching ports and canals. Mor. flot
25 no.7:12 J1 '65. (MIRA 18:7)

1. Kapitan teplokhoda "Murom".

AUTHOR: Spivak, M. A.

SOV/140-58-4-26/30

TITLE: Algebraic Theory of Coordinate Structures and Geometric Objects
(Algebraicheskaya teoriya koordinatnykh struktur i geometricheskikh ob'yektov)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, Nr 4, pp 236-247 (USSR)

ABSTRACT: The author generalizes the notion of a coordinate structure as a set of coordinate systems. He considers the mappings of an arbitrary set A into an arbitrary set B instead of the mappings of the geometric space into an arithmetic space, and he calls the sets of such partial one-to-one mappings atlantes. He forms an axiomatic of certain types of atlantes, where the axioms are set-theoretical properties of the coordinate structures of the spaces of Veblen-Whitehead [Ref 3], Klein, etc. Furthermore the geometric objects of Klein and differential-geometric objects (in the sense of Vagner [Ref 4]) are subordinated to the more general notion of the associated atlantes. Hereby some generalizations of the assertions of Vagner [Ref 4] are obtained. There are 4 references, 1 of which is Soviet, 1 French, and 2 American.

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ASSOCIATION: Saratovskiy gosudarstvennyy universitet imeni N.G. Chernyshevskogo
(Saratov State University imeni N.G. Chernyshevskiy)

SPIVAK, M. A.

"Synthesis of automation with least number of states and given response"

report submitted for the Intl. Symposium on Relay Systems and Finite Automata Theory (IFAC), Moscow, 24 Sep-2 Oct 1962.

PENZOV, YuYe.; RZHEKHINA, N.F.; GOKHMAN, A.V.; KABANOV, N.I.; KONOFLEVA,
Yu.K.; LOSIK, M.V.; SPIVAK, M.A.; ZARETSKAYA, N.V., red.

[Problems in vector algebra] Sbornik zadach po vektornoj
algebre. Saratov, Izd-vo Saratovskogo univ., 1964. 59 p.
(MIRA 18:4)

L 18804-65 EWT(d)/T Ph-4 IJP(c)/AFMD(p)/RAEM(1)/RAEM(d)/ESD(dp)

ACCESSION NR: AT5000717

S/2582/64/000/012/0069/0097

AUTHOR: Spivak, M. A. (Saratov)

TITLE: Interpretation of the theory of automata by methods of the theory of proportions

SOURCE: Problemy* kibernetiki, no. 12, 1964, 69-97

TOPIC TAGS: automata theory, logic circuit, abstract machine, homomorphism

ABSTRACT: An automata system is described as having three state descriptors X, S, and Y, which represent states of input, internal, and output devices, respectively. A state of an input device at a given moment, $x(t)$, is determined by an external condition. The state of the internal device at a given moment, $s(t)$, is a function of the state of the input device at that moment and a function of the state of the internal device at the preceding moment. The state of the output device $y(t)$ is a function of the simultaneous state of the internal device. The author considers the system of objects (X, S, Y, σ, μ) to be an automaton with input signal descriptor X, condition (state) descriptor S, output signal descriptor Y, transition function σ , and output function μ . Several basic results of the abstract theory of automata are presented, with emphasis directed to the synthesis of an

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ACCESSION NR: AT5000717

automaton according to given conditions. Preliminary treatment is accorded to notation and definitions within the automata theory. Binary relationships are symbolically defined for the operations of sectioning, projecting, transformation, product formation (union), and homologous union (reflective, symmetric, and transitive). Earlier work by S. Ginsburg (Some remarks on abstract machines, Trans. Amer. Math. Soc. 96, 3, 1960, 400-444) formed the basis of the theorem: "In order that an automaton A be minimal it is necessary and sufficient that it be rigorously bound." The terminology is that of E. F. Muro (Umozritel'nyye eksperimenty s posledovatel'nostnyimi mashinami, Sb. "Avtomaty" IL, M., 1956, 179-212). A minimal automaton is described in terms of a minimal stable subset of S_A . Necessary and sufficient conditions of a stable subset of S_A are detailed and proved. The

automaton A , if not bound, contains components termed subautomata. These subautomata are minimal automata themselves if the necessary and sufficient rigorous bounding relationship is its equivalence relationship. Homomorphism of two automata is discussed, the conditions of its existence, and the properties of homomorphism are listed. An automaton A is defined as a monomorphic specimen of sums of free automata. Homomorphism is also discussed in the context of automaton reaction and in two related problems. The properties of the canonical form are given, and five theorems are stated and proved in the theory of automaton synthesis.

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ACCESSION NR: AT5000717

Equivalence equations for relating systems of events to terminal automats are defined, and an example is worked out showing the sequence of formulas applied. Unions and intersections of event spaces are treated in a subsequent section. Orig. art. has: 19 theorems, and 1 figure.

ASSOCIATION: none

SUBMITTED: 21May62

SUB CODE: DP

NO REF SOV: 003

ENCL: 00

OTHER: 004

Card 3/3

L 44758-65

ACCESSION NR: AP5007250

S/0280/65/000/001/0051/0057

AUTHOR: Spivak, M. A. (Saratov)

TITLE: Algorithm of the abstract synthesis of automata for an expanded language of regular expressions

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 1, 1965, 51-57

TOPIC TAGS: automaton, automaton synthesis

ABSTRACT: The problem is considered of the abstract synthesis of an automaton whose working conditions are written in the regular-expression language that contains, in addition to conventional symbols, the signs \cap and ' which denote intersection and supplementing of events. As the abstract-synthesis algorithm given by R. F. McNaughton et al. (IRE Trans., EC-9, 1960, no. 1) cannot be directly extended over the expanded regular-expression language, the author suggests a new algorithm based on an expansion of the regular expression into a

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L 44758-65

ACCESSION NR: AP5007250

set of other regular expressions (the "basis"). It is also pointed out that the new algorithm permits the inclusion of other operations in the future. Orig. art. has: 4 figures and 16 formulas.

ASSOCIATION: none

SUBMITTED: 09 May 64

ENCL: 00

SUB CODE: DP

NO REF SOV: 004

OTHER: 003

2503
Card 2/2

SPIVAK, M.A. (Saratov)

Conditions for the decomposability of ratios into direct products.
Izv. vys. ucheb. zav.; mat. no.4:132-139 '65. (MIRA 18:9)

(A) L 10993-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l)

ACC NR: AP5028529

SOURCE CODE: UR/0286/65/000/020/0124/0124

INVENTOR: Smirnov, V. D.; Ushakov, V. N.; Spivak, M. A.; Gokhbaum, F. A.; Braylovskiy, M. I.; Astrova, T. I.

ORG: none

TITLE: Hydraulic cylinder for a high-capacity press. Class 58, No. 175823 ¹⁵ announced by Experimental Construction bureau of the central scientific research institute of building construction (Eksperimental'no-konstruktorskoye byuro tsentral'nogo nauchno-issledovatel' skogo instituta stroitel'nykh konstruktstly)

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 124

TOPIC TAGS: press, hydraulic press, high capacity press, press cylinder, cylinder design

ABSTRACT: This Author Certificate introduces a hydraulic cylinder for a high-capacity press. The cylinder (see Fig. 1) consists of inner metal shell 1, encased in a reinforced-concrete housing. Expansion joint 2 separates top 3 and bottom 4 of the housing to reduce the internal stresses. Orig. art. has: 1 figure. [DV]

Cord 1/2

L 10993-66

ACC NR: AP5028529

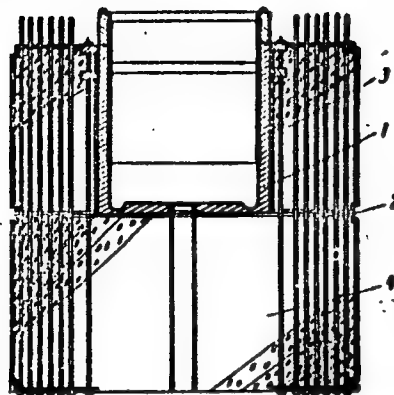


Fig. 1. Hydraulic cylinder

1 — metal shell; 2 — expansion joint;
3 — top of the housing; 4 — bottom of the
housing.

SUB CODE: 13/ SUBM DATE: 27May64/ ATD PRESS: 4170

BC
Card 2/2

SPIVAK, M.A.

Base development of a regular expression and its applications.
Dokl. AN SSSR 162 no.3:520-522 My '65. (MIRA 18:5)

1. Saratovskiy gosudarstvennyy universitet im. N.G.Chernyshevskogo.
Submitted December 3, 1964.

L 27898-66 EWT(d)/T/EWP(1) IJP(c) GG/BB

ACCESSION NR: AP5024537

UR/0378/65/000/004/0001/0011

519.95

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B

AUTHOR: Spivak, M. A. *16, 44*

TITLE: The algebraic characteristic of the calculational power of an automaton

SOURCE: Kibernetika, no. 4, 1965, 1-11

TOPIC TAGS: automaton, information processing, *16, 44* mathematic model, calculator, algebraic logic *K. 44, 155*

ABSTRACT: The author defines an automaton as a discrete converter of information. K. B. Krohn and J. L. Rhodes correctly defined in their paper (Proc. Sympos. Math. Theory Autom., New York, N. Y. 1962, Brooklyn N. Y., Polytechn, 1963, 341-384) the relative calculational power of automata. However, the algebraic characteristic of the relative calculational power given by these authors is not correct. The basic aim of the present paper is the establishment of the correct algebraic characteristic of the relative calculational power of automata. Following the definition of the mathematical model of the automaton and the characterization of the information conversion by means of the reaction concept, the author introduces the concept of reaction divisibility, extends this concept

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ACCESSION NR: AP5024537

to sets of reactions, associates the sets with abstract semigroups, and introduces the concept of fitted semigroups representing (G, E) pairs (E - the set of equivalent relationships over the semigroup G). Such a fitted semigroup of the reaction set characterizes effectively the calculational power of the set of reactions.. Orig. art. has: 125 formulas and 2 figures.

ASSOCIATION: none

SUBMITTED: 05Apr65

ENCL: 00

SUB CODE: DP, MA

NO REF SOV: 001

OTHER: 002

Card 2/2 CC

SPIVAK, M.S., glavnyy redaktor; BELOZUB, V.G., redaktor; VASILENKO, P.M., redaktor; ZORIN, I.G., redaktor; IL'CHENKO, I.K., redaktor; KOVAL', A.G., redaktor; KRYLOV, A.F., redaktor; PUKHAL'SKIY, A.V., redaktor; SIDORANKO, A.P., redaktor; RADCHENKO, A.N., redaktor; ANGELINA, P.N., redaktor; BUZANOV, I.F., redaktor; BOYKO, D.V., redaktor; BURKATSKAYA, G.Ye., redaktor; VASILENKO, A.A., redaktor; VLASYUK, P.A., redaktor; GORODNIY, N.G., redaktor; DEMIDENKO, T.T., redaktor; DUBKOVETSKIY, F.I., redaktor; KIRICHENKO, F.G., redaktor; LITOVCHENKO, G.P., redaktor; OZERNYY, M.Ye., redaktor; PERSHIN, P.N., redaktor; POPOV, F.A., redaktor; POSMITNYY, M.A., redaktor; PSHENICHNYY, P.D., redaktor; RADCHENKO, B.P., redaktor; ROMANENKO, I.N., redaktor; RUBIN, S.S., redaktor; SAVCHENKO, M.Kh., redaktor; SOKOLOVSKIY, A.N., redaktor; TSYBENKO, K.Ye., redaktor; KOVAL'SKIY, V.F., tekhnicheskii redaktor

[Practical collective farm encyclopedia] Kol'khoznaia proizvodstvennaia entsiklopediia. Izd. 2-oe, ispr. i dop. Kiev, Gos. izd-vo sel'khoz. lit-ry USSR. Vol. 1. Abrikos - liutserna. 1956. 688 p. (MLA 10:9)
(Agriculture--Dictionaries)